WHAT IS CLAIMED IS:

Claim 1. An optical wavelength filter formed of an optical fiber or an optical waveguide, having a core and cladding, with at least one of said core and cladding being formed with a structure of periodically varying diffraction coefficient extending along a direction of propagation of light through said filter, and with at least one parameter of said periodically varying diffraction coefficient structure continuously varying along said direction of propagation such as to create a range of reflection wavelengths of said filter; wherein

said periodically varying diffraction coefficient structure comprises at least one interruption portion in which interruption of said continuous variation occurs, for thereby creating a corresponding passband of said filter, with said passband located at a predetermined position within said range of reflection wavelengths.

Claim 2. An optical wavelength bandpass filter as claimed in claim 1, wherein said parameter which is continuously varied is a pitch of said periodic variation of diffraction coefficient, and wherein said at least one interruption portion comprises a portion of said periodically varying diffraction coefficient structure at which a transition

occurs from a first value of said pitch to a second value of said pitch.

Claim 3. An optical wavelength bandpass filter as claimed in claim 2, wherein said interruption portion of said periodically varying diffraction coefficient structure (3) comprises an interruption region (4) of predetermined length extending along said direction of propagation and located at a predetermined position along said periodically varying diffraction coefficient structure, with said continuous variation of said pitch being interrupted within said interruption region.

Claim 4. An optical wavelength bandpass filter as claimed in claim 2, wherein said interruption portion of said periodically varying diffraction coefficient structure (52) comprises a discontinuity (50) of said continuous variation of said pitch, said discontinuity being located at a predetermined position along said periodically varying diffraction coefficient structure.

Claim 5. An optical wavelength bandpass filter as claimed in claim 1, wherein said periodically varying diffraction coefficient structure has a fixed pitch, wherein said parameter which continuously varies is an average value of

diffraction coefficient of said periodically varying diffraction coefficient structure, and wherein said at least one interruption portion comprises a portion of said periodically varying diffraction coefficient structure at which a transition occurs from a first average value of diffraction coefficient to a second average value of diffraction coefficient.

Claim 6. An optical wavelength bandpass filter as claimed in claim 5, wherein said interruption portion of said periodically varying diffraction coefficient structure (40) comprises a discontinuity (41) in said continuous variation of diffraction coefficient, said discontinuity being located at a predetermined position along said periodically varying diffraction coefficient structure.

Claim 7. An optical wavelength bandpass filter as claimed in claim 5, wherein said interruption portion of said periodically varying diffraction coefficient structure (55) comprises an interruption region (56) of predetermined length extending along said direction of propagation and located at a predetermined position along said periodically varying diffraction coefficient structure, with said continuous variation of said average value of diffraction

coefficient being interrupted within said interruption region.

Claim 8. An optical wavelength bandpass filter as claimed in claim 1, wherein said parameter which continuously varies is a combination of a continuously varying average value of diffraction coefficient of said periodically varying diffraction coefficient structure and a continuously varying pitch of said periodically varying diffraction coefficient structure, and wherein said interruption portion of said periodically varying diffraction coefficient structure (60) comprises a discontinuity (61) located at a predetermined position along said periodically varying diffraction coefficient structure, with a transition from a first average value of diffraction coefficient to a second average value of diffraction coefficient, and also a transition from a first value of said pitch to a second value of said pitch, respectively occurring at said discontinuity.

Claim 9. An optical wavelength bandpass filter as claimed in claim 1, wherein said parameter which continuously varies is a combination of a continuously varying average value of diffraction coefficient of said periodically varying diffraction coefficient structure and a

continuously varying pitch of said periodically varying diffraction coefficient structure, wherein said interruption portion comprises an interruption region of predetermined length extending along said direction of propagation and located at a predetermined position along said periodically varying diffraction coefficient structure, wherein said continuous variation of said pitch and said continuous variation of said average value of diffraction coefficient are respectively interrupted in said interruption region

Claim 10. An optical wavelength bandpass filter as claimed in claim 1, wherein said periodically varying diffraction coefficient structure is formed by selective application of heat.

Claim 11. An optical wavelength bandpass filter as claimed in claim 10, comprising heat application control means for dynamically controlling the formation of said periodically varying diffraction coefficient structure by application of selected levels of heat to predetermined locations of said optical fiber or optical waveguide.

Claim 12. An optical wavelength bandpass filter as claimed in claim 11, wherein said heat application control means

comprises a plurality of heater elements (22) which are disposed upon a section of said optical fiber or optical waveguide (19) and are arrayed successively along said direction of propagation, means (26, 27) for supplying respective levels of current to said heater elements, and means (22, 23, 25) controllable for adjusting said levels of current to produce a desired configuration of said periodically varying diffraction coefficient structure within said section of said optical fiber or optical waveguide.

Claim 13. An optical wavelength bandpass filter as claimed in claim 1, wherein said periodically varying diffraction coefficient structure is formed by selective application of mechanical stress.

Claim 14. An optical wavelength bandpass filter as claimed in claim 1, wherein said periodically varying diffraction coefficient structure is formed by selective application of electric fields.

Claim 15. A method of manufacturing an optical wavelength bandpass filter comprising:

disposing a phase mask (13) adjacent to a section of an optical fiber (11) or optical waveguide,

interposing a blocking mask (14) between said phase mask and said optical fiber or optical waveguide, said blocking mask being adapted to obstruct transmission of light from said phase mask into at least one predetermined region of said optical fiber or optical waveguide, and

illuminating said phase mask with ultraviolet light (10), to thereby generate an optical diffraction pattern within said optical fiber or optical waveguide other than within at least one interruption region, with generation of said diffraction pattern within said interruption region being obstructed by said blocking mask.